Purpose

The primary purpose of Information Technology (IT) is to enhance and support business and administrative requirements and processes within the courts. Enterprise Architecture (EA) provides a comprehensive framework of business principles, practices, and technical standards that direct the design, construction, deployment, and management of information technology for the courts. EA functions as a "building code" that facilitates the application of IT to business initiatives and objectives leading to change in an orderly, efficient, and cost-effective manner by describing a direction for current and future activities, supported by underlying principles, standards, and best practices.

Adopting an IT architecture, although intuitively a positive organizational direction, is often difficult. Standards are many times perceived as being set at the expense of freedom. However, today's fast-paced technology demands and small funding amounts make architecture a strategic necessity. A mature IT enterprise must have the discipline to adopt and follow a consistent set of strategies, reference models, and exchange capabilities.

- Per Gartner, the strategic goal of enterprise architecture is to position the [entity] to leverage
 technology in support of the business strategy and make technology the proactive enabler of an
 agile, responsive enterprise that can react in real time to changes in the marketplace, and take
 advantage of new business opportunities.
- Enterprise architecture will provide standardization and elimination of redundancy and complexity across the Arizona Judicial Branch.
- The cross-jurisdictional nature of criminal justice activities supports adopting common architectures to facilitate integration.
- The Judicial Branch should avoid being what Gartner Group describes as a "typical unarchitected e-government" where "multiple sets of customer channels, interfaces and systems are independently developed ... and require duplicative infrastructure and forced disparate access experiences for constituents."
- There is a lower cost to buy and support a limited set of products and standards; the judiciary can leverage both volume discount buying and maintain a less complex environment.
- Non-standard products and applications create a challenge to support and yield security concerns.

Scope

The table below contains the adopted Enterprise Architecture for the Arizona Judicial Branch. The standards, protocols and products listed are prescribed for core, leveraged (enterprise) activities and applications among the courts statewide. Where there are unique, local undertakings that cannot be leveraged, a court is free to go beyond the standards set here. When sharable modules related to core applications are developed, the standards must be followed.

The "Distributed Component (Bolt-on) Module" (available at http://www.azcourts.gov/cot/EnterpriseArchitectureStandards.aspx) documents the approaches to development of local, leveraged, and core standardized (enterprise) modules. To be sharable, supported in the statewide framework or part of core standardized (enterprise) applications, modules must be developed to the Enterprise Architecture Standards of the Arizona Judicial Branch.

Definitions/Implications

Definitions	Implications
Baseline – Listing of products and	Provides context to aid reader in understanding the layer or scope
services typically in use today	being specified by the row in the table.
within the court system.	
Retirement – Obsolete product or	No new use allowed without exception being granted by COT.
technology being targeted for de-	Necessitates specific strategy in next IT Strategic Plan for
installation.	removal/replacement within plan period.
Containment – Use of product or	No additional use allowed without exception being granted by COT,
technology limited to maintenance	except enhancement or expansion of a current implementation. The
and current commitments only.	next stop on the lifecycle is retirement; therefore, further investment is
	unwise and serves to make removal/replacement more difficult and
	expensive.
Mainstream – The current	The primary option when adopting a new technology or selecting a
standard for any new systems or	new product. Any other choice requires that an exception be granted
migrations from legacy systems.	by COT.
Scope of Standard – Elaborates	Distinctions may be made by function, court size, or jurisdiction, for
on the degree or range of	example.
application of the mainstream	
item.	
Watchlist – Emerging	Included for court reference, these items may be dropped or moved to
technologies products or releases	mainstream in the next revision of the table as more becomes known
being considered for adoption but	about them. Courts should proceed cautiously in this area, using a
not yet formally adopted.	pilot approach to implementation.
Comments – Any related	
information not fitting within the	
other columns.	
Exception – A formal agreement	Requires use of the exception request document available at
to enable the court to pursue a	http://www.azcourts.gov/cot/EnterpriseArchitectureStandards.aspxand
non-mainstream direction or	submittal to TAC for recommendation to COT for a formal motion.
install a non-standard product.	Exceptions are granted only to the court requesting the exception –
	further development or use outside that court requires a further
	exception.

<u>Updates</u>
A bi-annual review of these standards by the Technical Advisory Council is recommended. Local or state automation projects requiring exceptions can initiate a review of selected items at any time.

Architecture Layers	Baseline (currently in use)	Retirement (targeted for de- investment)	Containment (limited to maintenance & current commitments)	Mainstream FUTURE (for new systems or legacy migration)	Scope of Standard	Watchlist: Emerging Technologies (to be evaluated for future inclusion)	Comments
Applications & Tools							
User Interface Delivery Method for Public Access	Browser-based: IE, Firefox, Chrome	Netscape, IE ≤6		Browser-based (Version Support) Responsive Web Design	For Microsoft Internet Explorer, Firefox, Google Chrome, Safari, Mobile Device Browsers	Edge	Websites should indicate browsers tested
User Interface Delivery Method for Business Applications	Browser-based, Windows forms: ASP, ASP.net	Character based	Silverlight	Browser-based (asp or asp.net), WPF, Windows forms, Angular		WinRT-Windows Universal Apps, Native Mobile Apps, HTML5 Universal Apps	
Electronic Document Management	Hyland OnBase, <u>LaserFiche</u> , SIRE, <u>FileNet</u> , <u>OpenText</u> , OBOL	LaserFiche, Hyland OnBase ≤11-13 SP2	Hyland OnBase 12 14 SP32SP1	Hyland OnBase 13 15 SP2SP1		Hyland OnBase 1517.X	
Document Imaging	Kofax; OnBase Scanning Module, PaperPort, FoxIt, ReadIris, ScandAllPro	Kofax Card (SCSI connection)	Kofax Ascent Capture	OnBase Production Document Imaging			See sep stds for non-OnBase scanning
Report Writer for Ad Hoc Reporting	Crystal Enterprise, Crystal <u>58</u> -11, SSRS	Crystal <10, MS SQL Server Reporting Services 2000 < 2005	Crystal 10, MS SQL Server Reporting Services 20085	Crystal >10, MS SQL Server Reporting Services 20082012 or 2014		MS SQL Server Reporting Services 2012/2016 SAP Enterprise 15 - KR	

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Report Writer for Business Application Reports	Varies: Crystal, native application report writers, "hard coded" reports, SSRS, Report Builder	Crystal <10, MS SQL Server Reporting Services 2005	Crystal 10; MS SQL Server Reporting Services 20052008	Crystal >10, MS SQL Server Reporting Services 20082012 or 2014		MS SQL Server Reporting Services 2012/2016 SAP Reports 15 - KR	
Data, Research, and Analysis Tools	SPSS SAS			SPSS, SAS, MS Analysis Services (SSAS)		<u>R</u>	
Development Languages	.ASP, .ASPX, classic ASP, .NET Traditional 3GL, MUMPS, JAM, RPG, VB6, C#, javascript, PERL, COBOL, FoxPro WebAPI	ASP (Classic), COBOL, JAM, RPG, MUMPS, FoxPro	Java (on a business case need basis), ASP (Classic), .NET Framework ≤V2V3.X, Silverlight	AJAX (streaming asp), .NET Framework 3.X and 4.X, , Windows Workflow Foundation, VB.NET, ASP.NET, C#.NET, F#.NET (on a business case need basis)	XAML WPF WCF MVC/WebAPI	DotNet Core, AngularJS, Erlang, Swift	
Development Environment	Visual Interdev, Visual Studio, PowerBuilder, Panther, MS- Access, Creative Suite, Hawkeye, Eclipse, PHP, JAM, Nevron	Panther, Visual Studio ≤20052008, Visual Studio 6, Visual Interdev	Visual Studio <u>≤20082012</u> , 2010, PowerBuilder, MS-Access, Panther	Visual Studio ≥20152010 and 2012		Visual Studio 2013Next Release, Xamarin	Xamarin as a Visual Studio Extension for Mobile Development

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Source Control	PVCS, Visual Source Safe, CCC Harvest (Phx.), Aldon (JOLTS), SCCS (DW), Team Foundation Server, eGIT, SVN, Subversion	Aldon		Must use source control	All developed systems	Git, Mercurial	Will consider a process to meet these requirements, and not a specified tool.
Analysis Tools	HOW, Visio, BPEL, Erwin, BPWin, Rational	HOW		UML, BPEL BPMN			
Code Generation	PowerBuilder, Visible Developer, Alachisoft TierDeveloper	Alachisoft	<u>Visible Developer</u>	T4 (with Visual Studio)		Razor, Roslyn	
Office/Personal Produ	ictivity Tools						
Word Processing	Word Perfect, Word	Word Perfect, Word≤2003200 7	Word <u>20072010</u>	Office 365, Word 2013 Word 20102016			
Spreadsheet	Quattro Pro, Excel	Excel < <u>20032007</u> , Quattro Pro	Excel 20072010	Office 365, Excel 2013 Excel 20102016			
Presentation	CorelDraw, PowerPoint	PowerPoint ≤20032007, CorelDraw	PowerPoint 20072010	Office 365, PowerPoint 2013 PowerPoint 2010/2016			
Local Standalone Database,	MS-Access, TurboImage, T- SQL, PostgreSQL	MS-Access ≤ 2003 2007	MS-Access 20072010	Office 365, MS-Access 2013 MS-Access 2010/2016	Non-Production use only		

Architecture Layers	Baseline (currently in use)	Retirement (targeted for de- investment)	Containment (limited to maintenance & current commitments)	Mainstream FUTURE (for new systems or legacy migration)	Scope of Standard	Watchlist: Emerging Technologies (to be evaluated for future inclusion)	Comments
E-mail Client Product	Outlook, GroupWise, Lotus <u>IBM_Notes</u>	Outlook ≤20032007, Lotus IBM Notes, GroupWise (unsupported versions)	Outlook 20072010, Lotus IBM Notes, GroupWise (supported versions)	Office 365, Outlook 2013 Outlook 20102016			
Instant Messaging	Yahoo Messenger, MS- Lync, MessengerSkype for Business., AIM, Trillian, Cisco Presence, IBM Sametime		MS-Live Communication Server, Lync	Lyne Skype for Business 2013 Skype for Business 2016	Jabber (@AOC)		
Collaboration	SharePoint, Exchange + Outlook, MS- Office, Office Live365, WebexWebEx, Google Apps, GoToMeeting, SMART Notebook			SharePoint Services, SharePoint Server >2007, Live Communication Server, WebEx, Google Apps, GoToMeeting		Business One Drive. Skype for Business - KR	
Desktop Video Conferencing				Skype for Business Real Presence			New row from KR
Remote Interpreting, ad hoc				Stratus / Language Line			New row from KR
Social Media Tools				Per Local Court Business Policy			

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Desktop Virtualization	VMWare, Citrix			VMware View, Citrix Xen	Thin Client Installation						
Distance Learning	Centra, <u>Granicus</u> , <u>TraCor</u> Accord <u>LMS</u>		<u>Centra</u>	Centra, Granicus, Accord LMS		TraCor LMS					
Data Architecture											
DBMS	Informix, DB2/UDB, SQL Server, MySQL, Clipper, FoxProOracle, Progress, B-trieve	SQL Server ≤2005 , FoxPro, Clipper	SQL Server 2008	SQL Server 2012- 2014, MSDE/SQLServer Express, MySQL	Court core business applications (on a business case need basis)	SQL Server 2016, MongoDB, Redis, Azure Document Database, Azure SQL	Black box DBMS not incl. Azure on the Government Cloud Only, NOSQL should be encapsulated in a Microservice Architecture				
Data Warehouse DBMS	Informix XPS, SQL Server		Informix XPS, SQL Server 2008	SQL Server 2012		SQL Server 2016					
DBMS Modeling Tools	PowerDesigner, Erwin, Visio			Power Designer, ER Studio, Erwin, Visio	UML 2.0 compliant		Tools must be capable of creating alter scripts to update database schemas.				

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Data Exchange Model	JXDD 3.0.0.1, Fixed format, XML homegrown, Electronic Court Filing (ECF)		Fixed format, XML homegrown	GJXDM V3.0.3, NIEM, ECF 4.X	Between autonomous systems	JSON+REST, Microservices	In conjunction with the Arizona Criminal Justice Commission's Arizona Data Dictionary. XML standard at http://it.ojp.gov/ jxdd
Scanning Format	Tagged Image File Format (TIF), Portable Document Format (PDF)			Tagged Image File Format (TIF), Portable Document Format (PDF)		Searchable PDF	Did we choose the wrong format years ago? - KR
Audio File Format	Proprietary formats, .WAV			Uncompressed .WAV format	For interchange with other courts and archive		Industry- standard output must be playable by non-proprietary readers.
Video File Format/ Protocol	Proprietary formats, AVI			SIP, H.323 H.264 (720p HD, 15 fps) AVI, NTSC	Transmission over AJIN Storage	Difficult to meet rule 1.6 reqts at 384k - KR	Max 384 kbps/ concurrent session –
Email Protocol	SMTP, MIME			SMTP and MIME	Ü		

Architecture Layers Data Transmission Encryption	Baseline (currently in use) Triple Data Encryption Standard (Triple DES)	Retirement (targeted for de- investment)	Containment (limited to maintenance & current commitments)	Mainstream FUTURE (for new systems or legacy migration) Triple Data Encryption Standard (Triple DES), DPS FIPS 140	Scope of Standard Per ACJA 1-503, the encryption key shall be maintained by AJIN mgt for all public records	Watchlist: Emerging Technologies (to be evaluated for future inclusion) AES (advanced encryption standard)	For data encryption over public networks
Stored Data Encryption				Back up data on mobile devices to court servers before encrypting	Per ACJA 1-503, the encryption key shall be maintained by AJIN mgt for all public records	BitLocker	Subject to pilot test results
E-mail Encryption	Secure Mail Gateway, S/MIME, Office 365			S/MIME Sophos (Server)	Transport only Storage		Req's usage procedure
Networks and Platforms	<u>, — </u>						
Network Protocol	Transmission Control Protocol/ /Internet Protocol (TCP/IP), SNA	SNA		TCP/IP, IPSec 4 (IPv4)		IPSec 4 (IPv6)	
Wireless Network Access	WEP, WTLS, PEAPWPA, WPA2, Web-Auth	WEP		PEAP, WPA2			
Network Operating System	MS-Windows, Novell NetWare	Novell (unsupported) Windows (unsupported)	MS-Windows Server 2003	MS-Windows Server 2008 R2, 2012 R2 - KR	For gaining access to any enterprise system	Windows Server next release	

Architecture Layers	Baseline (currently in use)	Retirement (targeted for de- investment)	Containment (limited to maintenance & current commitments)	Mainstream FUTURE (for new systems or legacy migration)	Scope of Standard	Watchlist: Emerging Technologies (to be evaluated for future inclusion)	Comments
Client Operating System	Windows 2000, XP, Vista, and 7, 8.1, 10	≤ Windows XP Vista	Windows 7 , Vista	Microsoft Windows 8.1, Windows 10	Current supported version only – previous versions are contained or retired		AOC apps not certified to run on Windows 7
Client Device Antivirus Software	McAfee, Sophos. Symantec, Trend, AVG			McAfee, Sophos			
Server Operating Systems	Microsoft Windows, UNIX, OS/400, DEC VMS-AIX, Solaris, Linux	OS/400, DEC VMS, Microsoft Windows ≤20032008	Microsoft Windows Server2003 Server2008 R2	Microsoft Windows Server 2012, 2008 R2 , UNIX, Linux	Enterprise applications	Windows Server next version 2016	
Patch Management	WSUS, LANDESK			WSUS, LANDESK			
Vulnerability Scanning Tool	Tenable Nessus, ip360 (nCircle)			Nessus Manager			
Server Antivirus Software	McAfee, Kaspersky, Sophos, Symantec			McAfee, Kaspersky, Sophos <u>, Symantec</u>	Remove Kaspersky and Sophos? - KR		
Server Virtualization				VMware Vcenter ESX		Docker (Application Virtualization)	
Mobile Operating Systems	BlackBerry O/S, Apple IOS, Android, Windows	BlackBerry O/S		Windows	AOC-provided devices for access to statewide apps		
Software as a Service							
Office Productivity	Office 365			Office 365			
Shared Services							

Architecture Layers Component Service Layer	Baseline (currently in use) DCOM, ASP, SOAP, MS- Windows	Retirement (targeted for de- investment)	Containment (limited to maintenance & current commitments) Web Services (previous version), DCOM, ASP	Mainstream FUTURE (for new systems or legacy migration) Web Services (current version), SOAP / REST	Scope of Standard	Watchlist: Emerging Technologies (to be evaluated for future inclusion) Web Services (next version)	Comments
	Communication Foundation (WCF)		(classic)	Objects, Remoting, MS-Windows Communication Foundation (WCF)			
Directory Services	Active Directory, Novell eDirectory (NDS), LDAP			Active Directory, ADFS, LDAP, AD-LDS	Within Branch Outside Branch		
Electronic Signatures	/s/ with internal two-factor authentication; signature pad; biometrics			MS Office Digital Signature, Adobe Digital ID	Self certification within court network	PKI, signature pad, biometrics, eSeal	Requires court policy changes accompanying e-filing.
Login Authentication	UserID/Password, Biometrics			UserID/Password, Biometrics		Smart Devices, Single Signon	
Remote Access through Internet (by employees or trusted partners)	VPN with IPSec, VPN with proprietary encryption, 3DES			VPN with IPSec, 3DES			
Message Transport Middleware							
Message Transport	MQ	MQ ≤V5.2	MQ V5.3/V6.0	MQ V7.0, MQ SSL		NServiceBus over MQ	
Data Transformation ETL	MQSI, Data Junction, Cloverleaf, BizTalk	Data Junction, MQSI ≤V2.1 , DTS	Cloverleaf, WMB V6V7.0, BizTalk	WMB V7 <u>8</u> .0, SSIS	At the state level; not required at the local level.	EventStore	

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Architecture Layers	Baseline (currently in use)	Retirement (targeted for de- investment)	Containment (limited to maintenance & current commitments)	Mainstream FUTURE (for new systems or legacy migration)	Scope of Standard	Watchlist: Emerging Technologies (to be evaluated for future inclusion)	Comments
Data Routing/Publish and Subscribe	MQSI; Cloverleaf, BizTalk	MQSI ≤V2.1	Cloverleaf, WMB V6V7.0, BizTalk	WMB V7 <u>V8</u> .0	At the state level; not required at the local level.	EventStore, NServiceBus	
File Transfer, Scheduled Production	FTP, <u>SFTP,</u> HTTP, MQ	FTP (intercourt and using public Internet), MQ ≤5.26.0	FTP (intracourt only), MQ V5.3/ V6 <u>V7</u> .0	MQ V7. 0 5, Web Services	Scheduled production transfers of data		Overall direction is toward MQ exclusively
File Transfer, Ad Hoc	FTP, <u>SFTP,</u> HTTP, MQ	MQ ≤ <u>56.20</u>	MQ V5.3/V6 <u>V7</u> .0	MQ V7. 0 <u>5</u> , FTP	One-time, unscheduled bulk transfers of data only		Transfer of sensitive data requires secure FTP
Jury Business Applications							
Jury Management	Jury+, Jury for Windows			Jury+ (see ACJA 1-501)			

Exceptions

Exception Process Evaluation Principles (detailed in *Enterprise Architecture Standards Exception Request Document* at http://www.azcourts.gov/cot/EnterpriseArchitectureStandards.aspx/EAS_Exception.doc):

- 1. City/County investment has already been made (apart from the court) that reduces the cost to the court.
- 2. Overall cost (total cost of ownership) is reduced from that of implementing the statewide standard. This savings must be balanced against the potential impacts to the broader Branch initiatives. Specific areas to be considered are: financial leverage, integration, support, and training.
- 3. Overall risk is reduced from that of implementing the statewide standard.
- 4. The local IT function is/will be providing support.
- 5. The technology demonstrates long-term viability. This must include the consideration of the vendor's viability and future costs to evolve the technology solution.
- 6. Substantially greater productivity is enabled through adoption of a local standard.

In addition, the court requesting an exception agrees to bear any later costs at the local level necessary to integrate the exception component or system with a statewide standard component or core system.

Arizona Code of Judicial Administration 1-505 adopts this document. It references this document, as maintained and published on the Commission on Technology Web site, as the Arizona Judicial Branch Enterprise Architecture Standards.